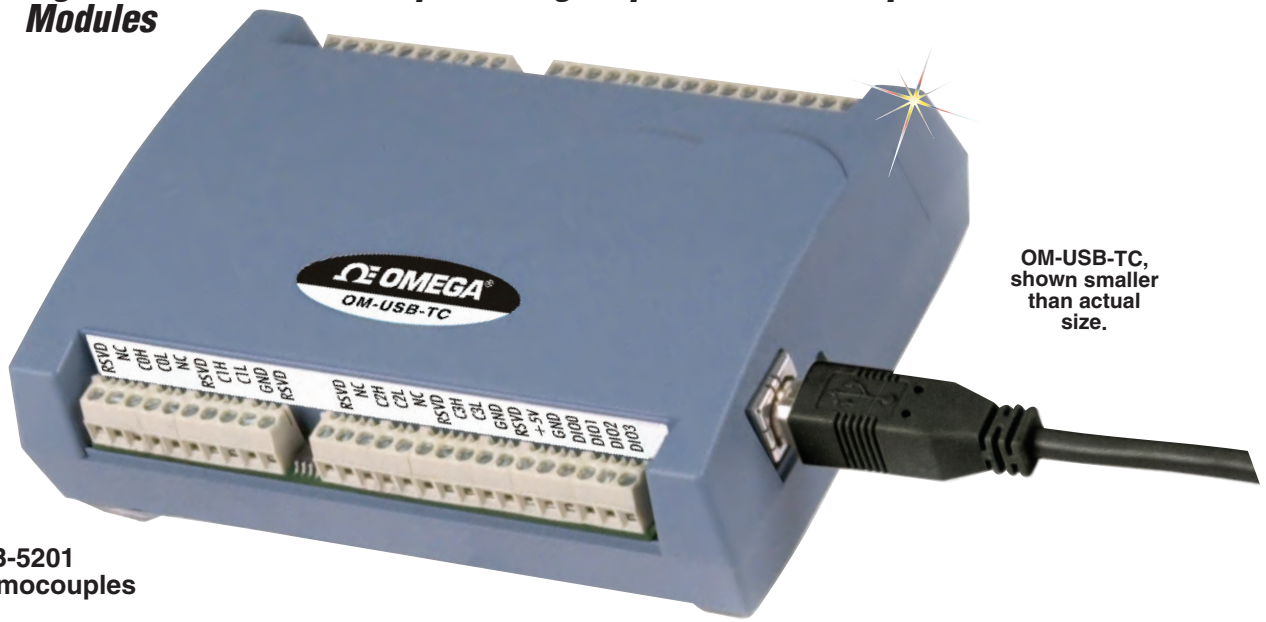
Eight Channel Thermocouple/Voltage Input USB Data Acquisition Modules



OM-USB-TC, shown smaller than actual size.

- **OM-USB-TC and OM-USB-5201 Have 8 Thermocouples Inputs**
- **OM-USB-TC-AI Has 4 Thermocouple Inputs and 4 Analog Voltage Inputs**
- **OM-USB-5201 Has Data Logging Capability (Compact Flash)**
- **24-Bit Resolution**
- **Software Programmable for Thermocouple Types J, K, T, E, R, S, B, N**
- **Built-In Cold junction Compensation and Open Thermocouple Detection**
- **Eight Digital I/O**
- **No External Power Supply Required (Except for OM-USB-5201)**

The OM-USB-TC, OM-USB-TC-AI and OM-USB-5201 are USB 2.0 full-speed thermocouple input data acquisition modules (fully compatible with both USB 1.1 and USB 2.0 ports).

These are stand-alone plug-and-play modules which draw power from the USB cable (included). No external power supply is required (except for OM-USB-5201 which requires an ac adaptor). All configurable options are software programmable, and the modules are fully software calibrated.

The OM-USB-TC and OM-USB-5201 provide eight differential thermocouple input channels and have two integrated cold junction compensation (CJC) sensors for thermocouple measurements.

The OM-USB-TC-AI provides eight analog input channels that are configured as four differential temperature inputs and four differential or single-ended voltage inputs. The module has one cold junction compensation (CJC) sensors for the thermocouple measurements. Thermocouples inputs are software programmable for types J, K, T, E, R, S, B and N. An open thermocouple detection feature lets you detect a broken thermocouple. An on-board microprocessor automatically linearizes the thermocouple measurement data.

Voltage inputs (OM-USB-TC-AI only) are software programmable for ±10V, ±5V, ±2.5V and ±1.25V ranges. Eight independent, TTL-compatible digital I/O channels are provided to monitor TTL-level inputs, communicate with external devices and to generate alarms. The digital I/O channels are software programmable for input or output.

The OM-USB-5201 features eight independent temperature alarms. Each alarm controls an associated digital I/O channel as an alarm output.

OM-USB-TC, OM-USB-TC-AI and OM-USB-5201

1 YEAR WARRANTY

The input to each alarm is any one of the temperature input channels. The output of each alarm is software configurable as active high or low. The temperature threshold condition to activate each alarm is user programmable. When an alarm is activated, the associated digital I/O channel is driven to the output state. The OM-USB-5201 also has data logging capability. Measurements can be logged to a standard CompactFlash memory card (a 512 MB CompactFlash memory card is included with the OM-USB-5201). Data logging can only be done when the OM-USB-5201 is disconnected from the computer. External power is required for data logging via the included ac adaptor. User programmable settings in data logging mode include sampling interval and logging start mode (on power up, on button press or at a specified data and time).

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The OM-USB-TC, OM-USB-TC-AI and OM-USB-5201 modules ship with an impressive array of software, including the new TracerDAQ®, a full-featured, out-of-the-box data logging, viewing, and analysis application; Universal Library™; ULx for NI LabVIEW (comprehensive library of VIs and example programs compatible with LabVIEW v.8.2.1 and later); and InstaCal™ installation, calibration, and test utility-powerful software solutions for programmers and nonprogrammers alike. These modules operate under Microsoft Windows 2000/XP/Vista (32-bit or 64-bit/7 (32-bit or 64-bit) operating systems.

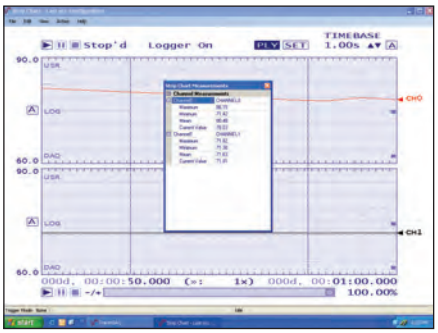
The OM-USB-TC, OM-USB-TC-AI and OM-USB-5201 data acquisition modules are supplied with TracerDAQ software which is a collection of four virtual instrument applications used to graphically display and store input data and generate output signals:

- Strip Chart—Log and graph values acquire from analog inputs, digital inputs, temperature inputs and counter inputs
- Oscilloscope—Display values acquired from analog inputs
- Function Generator—Generate waveforms for analog outputs
- Rate Generator—Generate waveforms for counter outputs

TracerDAQ PRO is an enhanced version of TracerDAQ.

A comparison of some of the features included in TracerDAQ vs TracerDAQ PRO is shown below.

TracerDAQ Strip Chart.



TracerDAQ Pro Strip Chart with Measurements.

Features Comparison

Strip Chart

Feature	TracerDAQ	TracerDAQ Pro
Channel Types	Analog input, temperature input, digital input, event counter	Analog input, temperature input, digital input, event counter
Number of Channels	8	48
Number of Lanes	2	8
Maximum Samples per Channel	32,000	1 million
Alarm Conditions	No	Yes
Measurements Window	No	Yes
Enter Annotations	No	Yes
Software Triggering	No	Yes
Hardware Triggering	No	Yes
Time-of-Day Triggering	No	Yes
Linear Scaling	No	Yes

Oscilloscope

Feature	TracerDAQ	TracerDAQ Pro
Channel Type	Analog input	Analog input
Number of Channels	2	4
Measurements Window	No	Yes
Reference Channel	No	Yes
Math Channel	No	Yes

Rate Generator

Feature	TracerDAQ	TracerDAQ Pro
Channel Type	Counter output	Counter output
Number of Channels	1	20

Function Generator

Feature	TracerDAQ	TracerDAQ Pro
Channel Type	Analog output	Analog output
Number of Channels	1	16
Waveform Types	Sine	Sine, square, triangle, flat, pulse, ramp, random, arbitrary
Duty Cycle	No	Yes
Phase	No	Yes
Gate Ratio	No	Yes
Rate Multiplier	No	Yes
Sweep (Linear and Exponential)	No	Yes

SPECIFICATIONS

A/D CONVERTER

OM-USB-TC and OM-USB-5201: Four dual 24-bit sigma delta A/D converters

OM-USB-TC-AI: Dual 24-bit sigma-delta A/D converters

Input Isolation: 500 Vdc min between field wiring and USB interface

Number of Channels:

OM-USB-TC and OM-USB-5201: 8 differential thermocouple inputs

OM-USB-TC-AI; 4 differential thermocouple inputs and 4 differential or single-ended voltage inputs

Maximum Input Voltage: Thermocouple inputs; ±25V (power on), ±40V (power off): voltage inputs; ±25V (power on), ±15V (power off)

Throughput Rate: 2 samples/sec max for all active channels

Input Impedance: Thermocouple inputs; 5 GΩ (power on), 1 MΩ (power off): voltage inputs; 10 GΩ (power on), 2.49 kΩ (power off)

Input Leakage Current: Thermocouples inputs; 105 nA max (with open thermocouple detection enabled), 30 nA max (with open thermocouple detection disabled): voltage inputs; ±1.5 nA typ, ±25 nA max

Maximum Working Voltage (OM-USB-TC-AI Voltage Inputs): ±10.25V max (input signal + common mode)

Common Mode Rejection: Thermocouple inputs, 110 dB min; voltage mode, 83 dB min

Warm-Up Time: 30 minutes max

Open Thermocouple Detection: Automatically enabled when a channel is configured for a thermocouple sensor

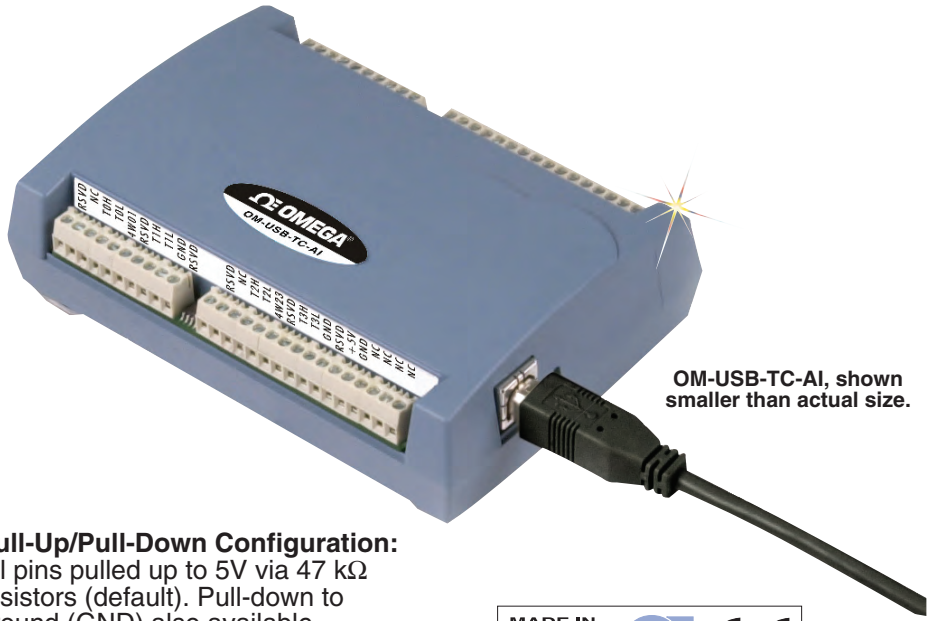
CJC Sensor Accuracy: ±0.25°C typical, ±0.5°C max (15 to 35°C); -1.0 to 0.75°C max (0 to 70°C)

DIGITAL I/O

Number of Digital I/O Channels: 8

Type: CMOS

Configuration: Each DIO bit can be independently configured for input or output; power on reset is input mode



OM-USB-TC-AI, shown smaller than actual size.

Pull-Up/Pull-Down Configuration: All pins pulled up to 5V via 47 kΩ resistors (default). Pull-down to ground (GND) also available

Digital I/O Transfer Rate (Software Paced):

Digital Input: 50 port reads or single bit reads per second (typical)

Digital Output: 100 port writes or single bit writes per second (typical)

Input High Voltage: 2.0V min, 5.5V absolute max

Input Low Voltage: 0.8V min, -0.5V absolute min

Output High Voltage: 0.7V max (IOL = 2.5 mA)

Output Low Voltage: 3.8V min (IOH = -2.5 mA)

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DC Voltage Input Ranges (OM-USB-TC-AI only)

Range	Accuracy (Absolute, mV)
± 10V	± 2.78
± 5V	± 1.40
± 2.5V	± 0.71
± 1.25V	± 0.36

Compatible Thermocouple Input Types

Type	Temperature Range	Accuracy* (Typical, °C)	
		OM-USB-TC-AI	OM-USB-TC OM-USB-5201
J	-210 to 1200°C (-346 to 2192°F)	±0.71 @ -210°C ±0.28 @ 0°C ±0.29 @ 1200°C	±0.51 (-210 to 0°C) ±0.31 (0 to 1200°C)
K	-210 to 1372°C (-346 to 2502°F)	±0.76 @ -210°C ±0.28 @ 0°C ±0.39 @ 1372°C	±0.54 (-210 to 0°C) ±0.35 (0 to 1372°C)
T	-200 to 400°C (-328 to 752°F)	±0.74 @ -200°C ±0.29 @ 0°C ±0.21 @ 400°C	±0.51 (-200 to 0°C) ±0.26 (0 to 400°C)
E	-200 to 1000°C (-328 to 1832°F)	±0.68 @ -200°C ±0.32 @ 0°C ±0.24 @ 1000°C	±0.46 (-200 to 0°C) ±0.25 (0 to 1000°C)
R	-50 to 1768°C (-58 to 3214°F)	±0.46 @ -50°C ±0.19 @ 250°C ±0.13 @ 1768°C	±0.65 (-50 to 250°C) ±0.36 (250 to 1768°C)
S	-50 to 1768°C (-58 to 3214°F)	±0.44 @ -50°C ±0.20 @ 250°C ±0.16 @ 1768°C	±0.65 (-50 to 250°C) ±0.40 (250 to 1768°C)
B	250 to 1820°C (482 to 3308°F)	±2.19 @ 250°C ±0.82 @ 700°C ±0.47 @ 1820°C	±0.58 (250 to 700°C) ±0.37 (700 to 1820°C)
N	-200 to 1300°C (-328 to 2372°F)	±0.76 @ -200°C ±0.28 @ 0°C ±0.25 @ 1300°C	±0.50 (-200 to 0°C) ±0.27 (0 to 1000°C)

** Includes cold junction compensation measurement error. Dependent on A/D data rate.*

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OM-USB-5201, shown smaller than actual size.

COUNTER
(OM-USB-TC-AI ONLY)
Number of Channels: 1
Resolution: 32-bit
Counter Type: Event counter
Input Type: TTL, rising edge triggered
Counter Read/Write Rates (Software Paced, System Dependent): 33 to 1000 read/writes per second
Schmitt Trigger Hysteresis: 20 to 100 mV
Input Leakage Current: ±1.0 uA typical
Input Frequency: 1 MHz max
High Pulse Width: 500 ns min
Low Pulse Width: 500 ns min
Input High Voltage: 4.0V min, 5.5V absolute max
Input Low Voltage: 1.0V max, -0.5V absolute min

DATA LOGGING
(OM-USB-5201 ONLY)
Memory Card Type: Compact Flash 512 MB card included: stores data for approx. 60 days when logging all 8-channels at 2 samples/sec or 150 days when logging only 1-channel at 2 samples/sec
Logging Rate: 1 sec up to 2^{32} seconds (1 sec intervals)
Logging Start Method: On power up, on button press or at specified date/time (user programmable)
Logging Stop Method: Button press

GENERAL
Power Supply Voltage (Supplied by USB Port): 4.75V min to 5.25V max
Power Supply Current (Supplied by USB Port): <100 mA typical (USB enumeration); 270 mA typical for continuous input with all inputs configured for disabled mode (500 mA for OM-USB-5201)
User 5V Output Voltage Range (connected to self-powered hub):
OM-USB-TC/OM-USB-5201; 4.75V min to 5.25V max
OM-USB-TC-AI; 4.9 V min to 5.1 V max
User 5V Output Current (bus powered and connected to self-powered hub):
OM-USB-TC/OM-USB-5201; 10 mA max
OM-USB-TC-AI; 5 mA max
Available Isolation: 500 Vdc min measurement system to PC
USB Device Type: USB 2.0 (full-speed)
Device Compatibility: USB 1.1, USB 2.0
USB Cable Length: 3 m (10') max
Dimensions: 127 L x 89 W x 36 mm H (5.0 x 3.5 x 1.4")
Input Connections: Screw terminal blocks (accept 16 to 30 AWG wire)
Operating Temperature: 0 to 50°C (32 to 122°F), 0 to 90% RH non-condensing
Storage Temperature: -40 to 85°C (-40 to 185°F)
Weight:
OM-USB-TC and OM-USB-TC-AI: 182 g (6.4 oz)
OM-USB-5201: 227 g (8.0 oz)

OMEGA CARE SM Extended Warranty Program

OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE℠ covers parts, labor and equivalent loaners.

AVAILABLE FOR FAST DELIVERY!

To Order *(Visit omega.com/om-usb-tc for Pricing and Details)*

Model No.	Description
OM-USB-TC	8-channel thermocouple input USB data acquisition module
OM-USB-TC-AI	4-channel thermocouple and 4-channel voltage input USB data acquisition module
OM-USB-5201	8-channel thermocouple input USB data acquisition module with data logging capability
SWD-TRACERDAQ-PRO	TracerDAQ Pro software
OM-USB-5200-ADAPTOR	Spare 100/240 Vac 50/60 Hz ac adaptor for OM-USB-5201 (USA plug)

All models include a 2 m (6') USB cable, software and user manual on CD.
***OM-USB-5201** also includes 100/240 Vac 50/60 Hz ac adaptor (USA plug) and 512 MB Compact Flash card.*
***Ordering Example: OM-USB-TC**, 8-channel thermocouple input USB data acquisition module and OMEGACARE℠ **OCW-1,** 1-year extended warranty adds 1 year to standard 1-year warranty,*